Abstract ID : 745

Title : NOVEL METHODS FOR ESTIMATING SURVIVAL RATES OF MARINE MAMMALS ALLOWS THE STATUS OF POPULATIONS TO BE MONITORED

Category : Conservation

Student : Not Applicable

Preferred Format : Oral Presentation

Abstract : Survival is a key parameter driving the dynamics of natural populations, and adult survival has been shown to be the most influential parameter in estimating the intrinsic rate of increase of long-lived mammals. Obtaining estimates of survival rate can therefore be a useful diagnostic tool for monitoring population status, and an integral component of demographic models used to estimate population growth rates. Few direct estimates of survival exist for odontocetes because of the difficulties in obtaining appropriate sample sizes from discrete age groups. If a robust statistical method for estimating survival rates from stranding, bycatch or harvest data was developed, it could have enormous potential for application to all species of marine mammals for which age-distribution data are available. In this paper we present a novel framework to estimate survival for marine mammal populations by fitting survival curve models to age frequency data. The development of our stochastic spatially explicit models differs from other complex modelling approaches, as it is not theoretical in nature. Instead, the models are fitted to the available age frequency data using robust statistical methods, with full incorporation of uncertainty. Further, the estimation of age-specific survival and fecundity allows the development of age-structured models that can incorporate potentially important effects, e.g. if human-caused mortality is selective across age classes. One also needs to examine whether individuals mixing outside the population's distribution area may pose a risk for a small population. Similarly, it is necessary to investigate whether mixing of animals from outside into the population's area could lead to an over-estimation of the conservation risk to the population, which could be over-looked in non-spatially explicit models. Data on harbour porpoises (Phocoena phocoena) in the Baltic Sea and neighbouring areas are used as an example to illustrate the performance and possible implementation of the novel framework.